WHAT IS CLAIMED IS:

1. A method of making a servo-patterned magnetic recording medium, comprising the sequential steps of:

(a) providing a magnetic recording medium, said medium including a magnetic layer having preselected first, higher values of magnetic coercivity H_c and magnetic remanence-thickness product Mrt;

(b) providing an apertured mask overlying a surface of said magnetic recording medium, said apertured mask including a plurality of servo pattern openings extending therethrough for selectively exposing a plurality of surface areas of said magnetic recording medium corresponding to said servo pattern;

(c) bombarding said apertured mask with ions for implanting said ions into said plurality of exposed surface areas of said magnetic recording medium for selectively reducing said first, higher values of H_c and Mrt of said magnetic layer at said exposed surface areas to preselected second, lower values of H_c and Mrt; wherein:

step (a) comprises providing a magnetic recording medium including a magnetic layer having sufficiently high first values of H_c and Mrt such that step (c) provides each of said plurality of exposed, ion-implanted surface areas of said magnetic layer with second, lower values of H_c and Mrt which are sufficiently lower than said first, higher values of H_c and Mrt for functioning as servo pattern-defining areas, but sufficiently high for providing said medium with thermal stability, high amplitude of magnetic transition, and high signal-to-noise ratio.

2. The method according to claim 1, wherein:

step (a) comprises providing a magnetic recording medium wherein said preselected first, higher values of H_c and Mrt are in the range from about 6,500 to about 10,000 Oe and in the range from about 0.55 to about 0.60 memu, respectively; and

step (c) comprises bombarding said apertured mask to form ion-implanted areas of said magnetic layer having preselected, second, lower values of H_c and Mrt of about 6,000 Oe and about 0.50 memu, respectively.

3. The method according to claim 1, wherein:

step (a) comprises providing a magnetic recording medium wherein said preselected first, higher values of H_c and Mrt are about 6,000 Oe and 0.50 memu, respectively; and

step (c) comprises forming ion implanted areas having preselected, second, lower values of H_c and Mrt of about 4,000 Oe and 0.40 memu, respectively.

4. The method according to claim 1, wherein:

step (c) comprises bombarding said apertured mask with ions selected from the group consisting of nitrogen ions and ions of at least one rare gas element having an atomic weight of at least 35.

5. The method according to claim 4, wherein:

step (c) comprises bombarding said apertured mask with said ions at a dosage of from about 1 x 10^{10} to about 1 x 10^{20} ions/cm^2 and an energy of from about 5 to about 150 KeV.

6. The method according to claim 4, wherein:

step (c) comprises bombarding said apertured mask with nitrogen or argon ions.

7. The method according to claim 6, wherein:

step (c) comprises bombarding said apertured mask with said nitrogen or argon ions at a dosage of from about 1 x 10^{10} to about 1 x 10^{20} ions/cm^2 and an energy of from about 5 to about 150 KeV.

8. The method according to claim 1, wherein:

step (b) comprises providing a said apertured mask including a plurality of openings for providing said magnetic layer with a data zone and a servo pattern comprising a plurality of higher H_c, higher Mrt regions and a plurality of lower H_c, lower Mrt regions.

9. The method according to claim 8, wherein:

step (b) comprises providing a servo pattern including a plurality of regions extending in a radial direction across said data zone to divide the latter into a plurality of sectors.

10. The method according to claim 8, wherein:

step (b) comprises providing said apertured mask in the form of a patterned stencil or a photolithographically patterned resist layer.

11. The method according to claim 1, further comprising:

(d) initializing said servo-patterned magnetic medium by applying a unidirectional, high strength DC magnetic bias field to said magnetic layer to unidirectionally align the magnetization direction of each of the magnetic domains of the ion-implanted and non-implanted areas of said magnetic layer and then lowering the strength and reversing the direction of said DC magnetic bias field to selectively reverse the magnetization direction of each of said ion-implanted areas of said magnetic layer.

12. The method according to claim 11, wherein:

step (d) comprises utilizing an externally positioned, variable strength, reversible polarity electromagnet for applying said unidirectional DC magnetic bias field.

13. The method according to claim 11, wherein:

step (d) comprises utilizing an externally positioned, reversible polarity movable permanent magnet for applying said unidirectional DC magnetic bias field.

14. A servo-patterned magnetic recording medium, comprising:

a magnetic layer having a surface with substantially uniform topography, said magnetic layer including a data zone and a servo pattern, said servo pattern comprising:

(a) a first patterned plurality of regions of first, higher values of magnetic coercivity H_c and magnetic remanence-thickness product Mrt; and

(b) a second patterned plurality of implanted regions of second, lower values of H_c and Mrt; wherein said second, lower values of H_c and Mrt are sufficiently lower than said first, higher values of H_c and Mrt for permitting sensing enabling accurate positioning of a read/write transducer head in said data zone but sufficiently high for providing said medium with thermal stability, high amplitude of magnetic transition, and high signal-to-noise ratio.

15. The magnetic recording medium as in claim 14, wherein:

said first, higher values of H_c and Mrt are in the range from about 6,500 to about 10,000 Oe and in the range from about 0.55 to about 0.60 memu, respectively; and

said second, lower values of H_c and Mrt are about 6,000 Oe and about 0.50 memu, respectively.

16. The magnetic recording medium as in claim 14, wherein:

said first, higher values of H_c and Mrt are about 6,000 Oe and 0.50 memu, respectively; and

said second, lower values of H_c and Mrt are about 4,000 Oe and 0.40 memu, respectively.

17. The magnetic recording medium as in claim 14, wherein:

said servo pattern comprises a plurality of regions extending in a radial direction across said data zone for dividing said data zone into a plurality of sectors.

18. The magnetic recording medium as in claim 17, wherein:

said data zone includes a plurality of substantially concentric, circumferentially extending data tracks, and said servo pattern comprises said regions of second, lower values of H_c and Mrt for denoting the beginning and end of each data track.

19. The magnetic recording medium as in claim 14, wherein:

each of said second patterned plurality of regions of second, lower values of H_c and Mrt comprises a portion of said magnetic layer including implanted nitrogen ions or implanted ions of at least one inert gas element having an atomic weight of at least 35.

20. A magnetic recording medium comprising:

a magnetic layer having a surface with substantially uniform topography; and

means within said magnetic layer for providing a data zone and a servo pattern while affording said medium with thermal stability, high amplitude of magnetic transition, and high signal-to-noise ratio.